ANT/BAI/00

0001

0-200 800-1000 Field No 8.

INDEX

Page	Subject
	Samples JB1 etc
	locality 0 -> 200.
	Reg. No 6928
	True [redacted] North.
	All compass bearings adjusted for 70° Declination (west) 0-
2	Mousinho Rock
5	W. Side Gillock 6
9, 28	Haigh Mtn
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30.	Mt. McCarthy
40	Radok Lake Area.

PRINCE CHARLES MOUNTAINS
ANTARCTICA

1969 SURVEY

JOHN BAIN ①

Please return to:

Bureau of Mineral Resources
P.O. Box 378
Canberra City 2601
ACT.

Survey party approx 140 ft asl, camp @ Pickering.

14-1-69. Mosenho Rock
at Camp site. Alt. 700 ft.

001 Migmatite Foliation
80°S/075°
Coarser ~~bed~~ bands up to ~30 cm
in places concordant elsewhere
discordant with the general
foliation.
The coarse granitic material
is very leucocratic qtz rich
The finer host rock forms
about 80% outcrop Sample JB1
It is garnetiferous qtz bi gneiss

The rocks are coated with a
polished layer of brown iron
rich material. In places the
granitic fraction in particular
has a yellow oxidation coating
Also present in small cracks &
crevasses is a white powdery
material Sample JB7
(For analysis)

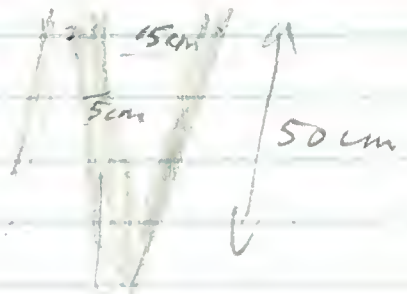
Grain size varies from a fraction of a millimetre to 5-6 mm within the host rock - gneiss
Jointing is pronounced. 020° giving angular blocky boulders and very fractured low boulder outcrops. JB 2, 3 & 4.
There is much loose material and much of it has been sorted into 'stone' polygons approx ~~---~~ 2-3 metres across. but many up to 10-12 metres.
All rock material is reddish brown on the weathered surface

On crest of Mousinho Rocks:
~ 50% of rock is coarse grained with foliation 85°S/075°
Thinly banded (1 cm - 1 mm)
highly fractured outcrops
A well developed set of joints trend 015°-025°

Discordant lenses and veins of coarse leucocratic granite material with a pronounced granitic texture occur at several spots. These bodies vary from 1/2-1 metre across and several metres long & 2 large bodies about 4m x 3m. near the summit. These bodies are clearly visible from some distance away.

Sample JB6 is of this body ~~I~~ or Sample JB5 is from 2 metres away in the host rock. The granitic rock (gneiss) is roughly concordant but actually intersects the foliation at its extremities.

002 West side Gillock Is.
First rock south end going north.
A sea of broken rock. Average size 30-60 cm. Very angular. Some boulders up to 2-3 metres.
Rock type: Garnetiferous 9½ brecciated gneiss. ie. the host rock of the migmatite. V. similar to 001 but less of the leuco fraction also the gneisses are better developed and show ? light folding



Average rock: JB 8
Other bands more leuco others more mafic
Generally med. grain.
Foliation ~ 855-90/080-085°

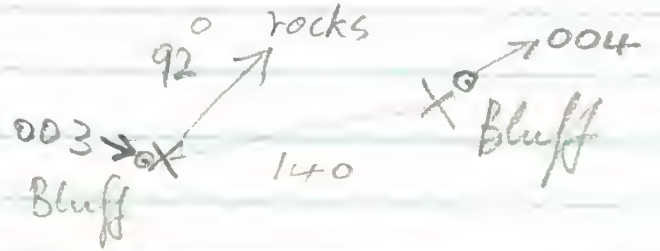
Small black brittle lichen (5–10 mm rosettes) is common on many rock surfaces here – doesn't appear to favour particularly sheltered spots.

Coarse garnet qtz felsp gneiss forms bands 10–100cm thick concordant with general foliation (085°). Garnets are up to 1cm in diameter. Qtz forms up to 30% all rock types.

JB 8 : Most common
JB 9 : part of type 8
JB 10 : } common leuco fract"
JB 11 : }
JB 12 : } Slightly less common
JB 13 : } than 8 & 9.

Alt 1000 ft

003 Northern most of 2 prominent bluffs about midway along west side Gillock Is



Sample of 2 type lichen
(003) long (hairy type)
Short woody type } green
also present but not collected:
small black patchy type
and yellow moss
Black type most common

Rock type is very coarse grained leuco granite gneiss similar to Landing Bluff. Blocky rounded boulders result from pronounced jointing pattern.
This bluff appears fairly homogeneous in rock type.
Sample JB 14 Rep 95%

Small angular pebbles form thick scree between large (2-3m) boulders

Sample JB 15 from patch 3×3 metres is much more leuco and much finer grained. Relationships obscured.

JB 14 contains garnet and feldspars up to 3cm long

004 Very similar to 003
but only type JB 14 present.
Sample JB 16. fresh for TS.
Weathered rock brown.

005 JB 17 Sample
Very similar to SW most end of
Gillock Is.
Foliation 135° vertical

Haugh Nunatak. 17-1-69.

006 More than 60% of rock here is moraine.
Rock outcrops is thinly banded garnetiferous biotite qtz fels gneiss - medium grained
Foliation dips South - 70°/165
Sample JB 18 of typical gneiss from chopper

Sample JB 18
apparently lost from helicopter
but Haugh Ntk late (24/1)
revisited and resample
in more detail. JB.

page 28-29.

Pickering Nunatak 17-1-69.

007 At campsite: Alt: 850 ft approx

Samples JB 19 leuco granite
JB 20 mafic gneiss
JB 21 granite (bi)
JB 22 mafic gneiss
JB 23 leuco granite
JB 24 mafic gneiss

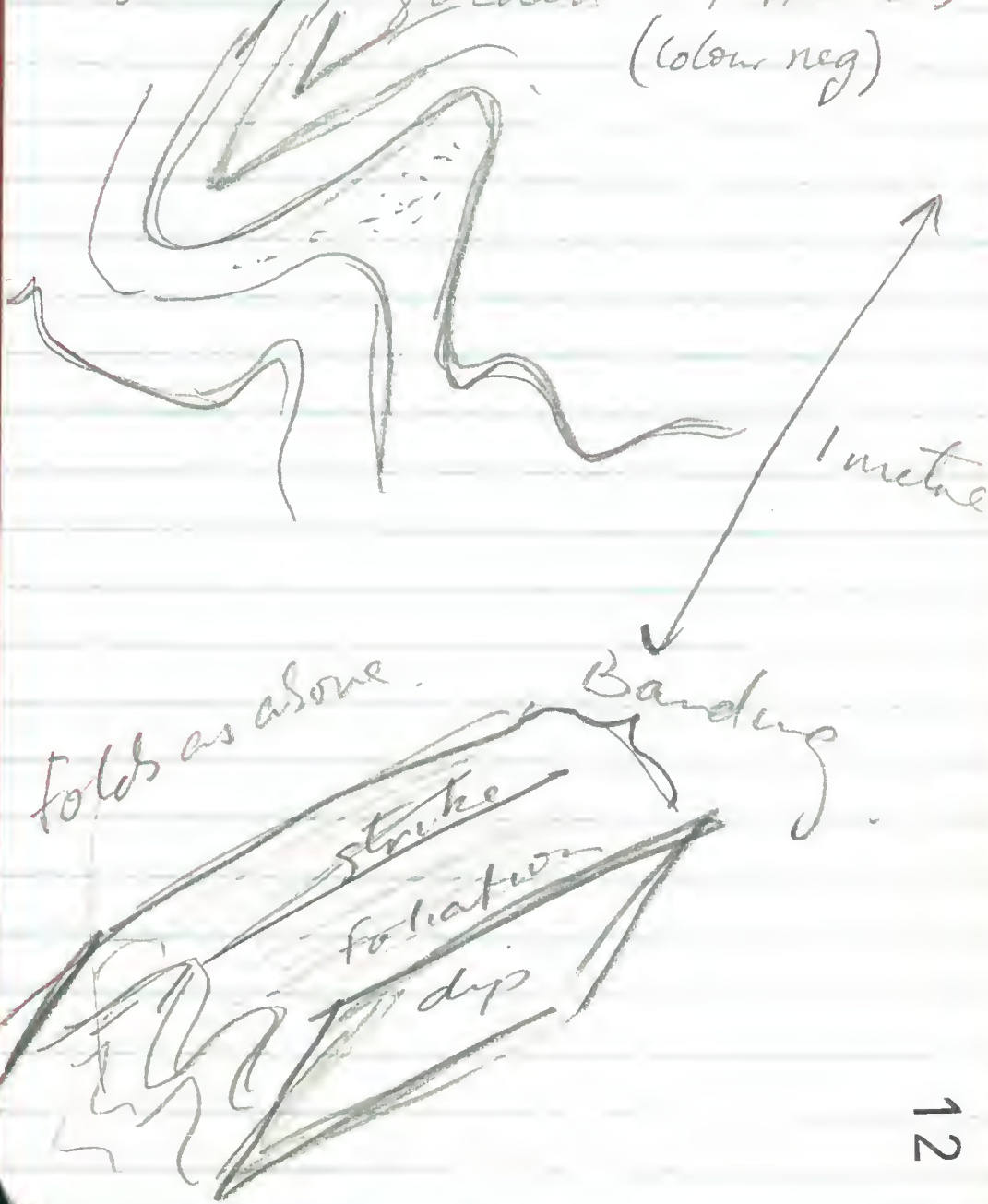
Agp Det

~~Traverse~~ 50 metres east of Summit (Survey peg) 140 ft above camp
Rocks dip South approx 45-50°
Bands of granite (leuco) 2-3 metres with host rock - migmatite
bands of gneiss 2 → 4 metres
Gneiss contains about 20-40% biotite and is thinly layered
medium to fine grained with stringers & veins of coarse/med grained granite (leuco) material parallel to banding.
Mostly banding is parallel

10

but in places there is much small scale folding (stigmatic folds).
The gneiss varies from mafic to leuco. with all gradations and combinations.
Some coarse layers interspersed with the fine bands.
Bands of leuco-granite are mostly discontinuous but persist for up to ± 100 metres or so or as short as 20-30 m.
Small (20-30 cm wide) bands of granite are only a few metres long.
The foliation & banding has a general ——— strike but the bands twist and turn around

Within these bands the gneiss is often quite strongly folded PHOTOS (colour neg)



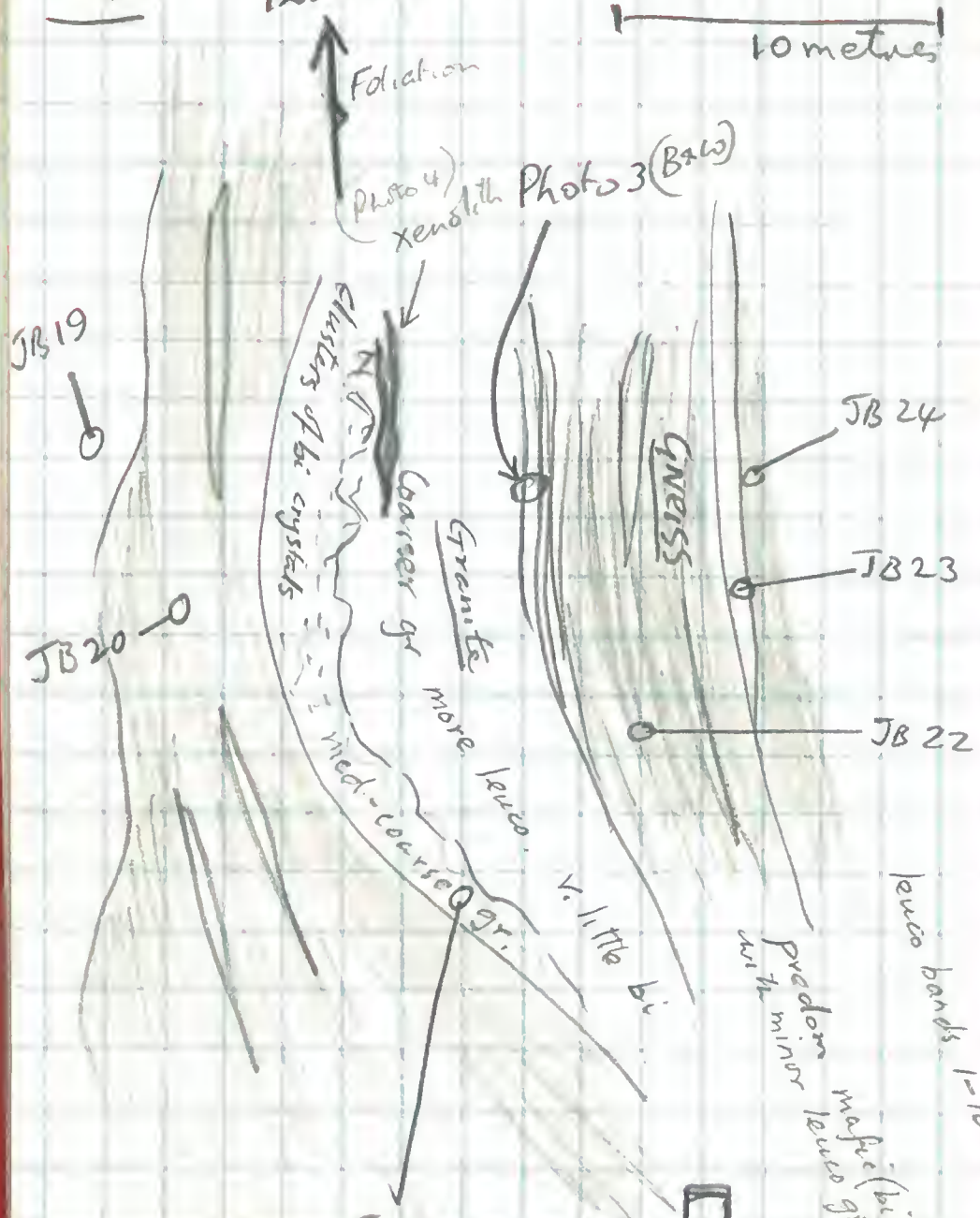
Plan

007

125° True.

Scale Approx

10 metres



14-1-69

Samples for age determination
taken from ADI. point 007
just near campsite.

JB 19 - leuco granite
JB 20 - mafic - bi qtz feld gneiss
JB 21 - med gr. bi leuco granite (white)
JB 22 - mafic bi gneiss
JB 23 - leuco granite - med gr.
JB 24 - mafic gneiss.

18-1-69

008 – Small rise in saddle north of survey pt. Summit forms South eastern limb or spur of northern ridge. Rise is about 150ft below survey station.

Rocks in the vicinity are:

50% gneiss < predom mafic varieties, minor leuco "

50% coarse gr. leuco granite.

The granite is to some extent porphyritic containing very large (5-7 cm) K-felsp crystals in a gt-felsp gm. which is also coarse-to medium grained.

Biotite is very minor and forms about ½-1% generally and up to 2-3% near the margins.

K-felsp is by far the major constituent.

The granite forms bodies ~ 3×30 metres – some smaller few larger. They are generally lensoidal and

arranged slightly en echelon although some continue along strike for several hundred metres, with only small breaks of 20-50 metres. These bodies roughly parallel the regional foliation 125-130°, but tend to intersect it at low angles regionally and ~~at~~ high angles locally. Small ~~xenoliths~~ [xenoliths] of mafic gneiss are common and correspond closely to the enclosing country rock, indicating local derivation. The granite forms rounded outcrops and commonly forms the high points of the ridges on Pickering. These ridges all roughly parallel the regional foliation.

The mafic rocks are thinly banded,

biotite qtz feldspar gneiss
They are mostly fine grained.
and appear to have been folded about an axes roughly 125°/130°

Age Det Samples:

JB25 leuco granite 50 cm from edge

JB26 leuco-bi felsp qtz gneiss
(South of 25)

JB27 melanocratic bi px qtz feld gneiss
(north of 25) Most common gneiss at this locality

All samples from with 10 metre diameter circle

Some small veinlets in 27JB contain garnet. The veinlets are felsp and much coarser gr.

JB 28 Extremely mafic variety contains pyroxene

009 150 metres west of 008

JB 29 Sample of extremely mafic bi px gneiss Thin bands 15-20cm (granulite)

Proceeding to eastern end of northern ridge
As before white small pods and veins of biotite rich feldspar pegmatite
Gneiss all rather mafic

Small garnet feldspar granite erratics are fairly common but no outcrop.

010 [redacted]. North East Col.
Pickering N+k

Rock type predom
garnetiferous biotite granite gneiss
(~ 80%), with minor
granite and pegmatite on
South side.
The granite is v. coarse with
large pink crystals of K fels.
Sample JB 30. There are
very many varieties of this
granite and no boulders
are homogeneous. The granite
is very leuco but contains
1–2% biotite.

The garnet gneiss JB 31
is leucocratic qtz rich and
contains schlieren of biotite
flakes and randomly scattered
garnets up to 1 cm diameter.
The rock is a greyish colour
on the broken & weathered
surfaces. It has a pronounced

gneissic texture in part, elsewhere it is granular in texture with a slight foliation evident. The rock is quite heterogeneous and biotite can form up to 60% of the rock in places. Mostly biotite is minor

JB 32
JB 33
JB 34
JB 35

011 40 metres from campsite — Crandall Survey beacon. 20/1/69. One rounded ?erratic boulder of ?olivine rich rock ??? or dioys.* Samples JB 36 This rock is possibly an erratic from an earlier glaciation as no other similar boulders or outcrops were seen. However it is only about 35 metres below the summit of Pickering.

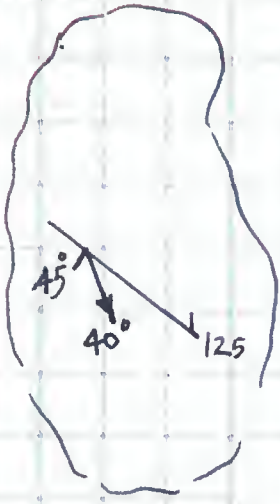
Alt. at camp 800 ft 21-1-69
at 1400 hrs

At Summit 2 metres north of Survey beacon. Foliat 45°S/25°.
Banded migmatite gneiss:
Bands of granitic material 2 mm to 3 cm
Bands of mafic material 2 mm - 4 cm are layered medium grained .5-1 mm felsic-biotite - qtz - gneiss. The granitic bands are deficient in bi and contain a higher % of felsp.

This migmatite gneiss appears in many similar to the photo of the Palmer migmatite in White's paper.
Small concentric folds and styganatic folds occur in the gneiss

Very coarse grained granitic bands 2 metres wide parallel the foliation and dip S at 45°

20


45°
40°
125

Biotite selvedges against the granite veins and bodies are not common here although well developed at other localities.

Biotite (<1%) occurs as scattered clusters of flakes throughout the coarse granite.

Large (up to 10cm) crystals of pink orthoclase / perthite are common in the body immediately north of the survey beacon

Regional Foliation 45°S/125°

Minor fold axes Strike 160° at 40°

(This may be altered somewhat by rotation of the fractured outcrops by frost action but amount would be virtually insignificant in this case I think)

Plunge 40° at 160°.

012 South of Camp. Site - a low saddle.

Common rock types:
bi-porphyroblastic granite gneiss containing veins and bands of leuco granite or bi-qtz vein (0.5 — 5.0 cm wide)

Foliation:
The gr. gneiss forms more than 70% of the rock.

Rubble of pink biotite bearing aplite (gneiss) is present.

JB 45

There is no coarse grained leuco granite as occurs in the northern ½ of the NTK

Up on to the Southern most ridge through rocks as above + mafic gneiss similar to that at 009

Many minor pink aplite veins

~~000~~ 013 Southernmost ridge, is composed of med. to coarse grained bi, ?px, qtz ± felsp gneiss or foliated granite
It is massive, weathers into rounded tors. There appears to be an alignment of mafic minerals (mainly bi) along 135°
It has a sugary texture
The rock is dark grey in colour and forms the bluffs at the Southern end of the ridge
In places it is cut by small aplite & pegmatite veins
It may be a granodiorite. ~~dio~~ ± gn.

Hoja Del Samples:

JB 37 Leuco bands assoc with porphyroblastic gneiss (JB 41)

JB 38 Leuco band or veins in the mafic gneiss (JB)

See photo of these leuco veins (.5 - 1.5 metre wide)

JB 39 Veins and irregularly shaped pods within the mafic gneisses

JB 40 Mafic gneiss from edge of Southern bluff

JB 41 Porphyroblastic ± granite gneiss — North of mafic gneiss - Forms bulk of rocks in Saddle between Camp 2 & S. bluff

JB 42 Very weathered but most common variety of mafic gneiss. May be weathered portion of JB 40

JB 43 Mafic gneiss — biotite rich variety ?—, -bi-qtz gneiss

JB 44 a) Red coating common on many rock faces particularly on leuco varieties of rock

(b) ?olivine c. epidote rock } north of S Survey beacon

(c) " "

Surf sediments

The Samples JB 42 and JB 41 are the most common rock types in the Southern part of the NTK suite many granitic pegmatite veins,

Qt - K feld - bi pegmatite forms small veins or irreg shapes in most rock types but was not collected

012

JB 45. Pink bi aplite was collected from a field (about 200 - 300 metres) 013 cluster (37 - 44).

2 Rocks @ 8m : 5½
@ Pickering 24-1-69

Northernmost rock

014 large amount of moraine only. Mounds. 10-20 metres high & rounded boulders of metamorphics (nothing new) All sizes up to ≈ 3 metres or so.

Southernmost rock

Landmark is only a very deep melt lake with 3-4 metre cliff of ice on eastern side. Appears to be 2 small rock outcrops not more than 1 metre square and inaccessible

Many melt lakes & streams in this area

Haigh Nth 24-1-69.

015 (sec also 006) 71°15'1 : 71°15'

Rather leuco. granitic gneiss contain some garnetiferous bands. Overall bedding is ~10-20°
Foliation near vert. – 20° S/065
(not 165 as shown at 006)
This foliation surface is tightly folded on a small scale

and cut by coarse gn. almost pegmatitic bi-kfels-granite dykes and veins up to 30 cm (average size 30 cm)
These strike at various angles to the foliat". commonly 180°

28

Outcrops are massive rounded, and covered with scattered rounded ~~boul~~ boulders and fine scree.
The migmatite (gneiss) is similar to parts of same on Pickering but the overall nature of the Ntk is diff
No concordant granite bodies only intersecting late stage dykes.

Sample JB46 gneiss

Sample collected by previous collector taken from a mafic band and does not rep the common rock type.

JB47 gn
JB48 gn.

Mount McCarthy 24/t -

016 Summit Station - 5,625 ft.

JB50 →
Mostly leuco granite gneiss (massive) with thin bands of more foliated bi/els. qtz gneiss ← JB49
At the survey pt there is a thin (30cm) dyke

JB49 20 metres east of summit
This rock type occurs as small shattered fragments - - no large boulders.

JB 50 Summit 10cm from top (1800m.) at survey peg.
Forms most of summit outcrop and weathers to large rounded tors and small frost shattered boulders with a red stained weather surface which is in parts polished and elsewhere corroded and drilled out by

combination of wind and frost action. Surface is very similar to rocks in arid lands. Foliation 086° Dip N 60° is common to the whole land mass at Mt McCarthy.

017 50 meters below Summit at top of drift on west ridge down to camp site. Outcrops of fresh garnet felsic qtz gneiss. JB 51 Most of rock same as 016

018 2/3 of way up slope from campsite to ridge leading to Summit (where snow drift starts (NW side)). Outcrops JB 52 (PTO) with small 2cm pegmatite veins cutting rough foliation. pegmatite JB [redacted] 53, 54, 55 Contains gn. ?tourmaline and some metal (unidentf) JB 55

JB 52 – gn. – bi. – ?fels – qtz gneiss rather similar to gneissic granite or granite gneiss. Very poorly developed foliation. – evidently only on regional scale.

Rocks along the ridge (or spur) from Summit to the camp are almost entirely as at the summit. In places gnts, foliation more evident. Also some more biotite rich varieties

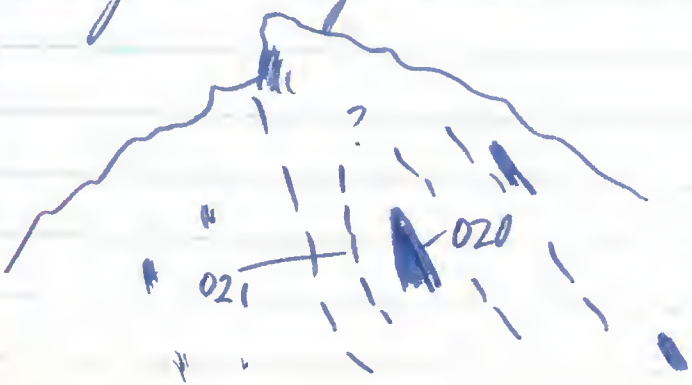
See Nat Map Terrestrial Photos
Mt McCarthy No 5 Nth End Base
No 8 5th " "

28-1-64

019 Prominent ridge of rock on slope west of camp (at edge of large snow slope) JB 56 — gneissic leuco. gran. or leuco felsic gneiss. with v. minor bi-gnt.

020 on eastern face of large peak immediately east of Wignal Peak.

Outcrop 20 × 50 metres of dark fine grained biotite gneiss? Felsic? gneiss. JB 57 possibly core of small anticline regional foliation as before.



021 10 metres South of 020 Outcrop of coarse grained massive to graphic granite gneiss very leuco. Sample JB 58

The N.E. McCarthy rocks are almost entirely poorly to well foliated leuco g.t.s felsic gneisses with minor amounts of bi- and gnt. The leuco varieties tend to be far more massive and more poorly foliated than the mafic (bi rich) types which occur mostly as small (10-15 cm) fragments in the scree. These dark cobbles form 1-10% of the scree in most instances but but their presence in the scree although widespread is not uniform — depleting

37

the underlying bands or 'pods' of more mafic material in the leucocratic gneiss. Small areas of actual outcrops (eg 020) are easily visible on the hillslopes from a distance but are not common and rep only 5% or so at the most of the total rock outcrop. Foliation // the regional foliation is well developed in most cases.

No basic dykes were seen cutting across the regional foli" but minor (2-3 cm wide) veins of pegmatitic material are fairly common in places. They have random orientation. No shear zones as reported by Crohn were observed although if paralled to the foliation they would be hard to pick from that foliation.

022 2/3 of way to 023
picked up drifter of Connor
gnt - 9/3 - Feb green. JB 59

02B 31-1-69.

North western spur from Mt McCarthy
Photos 18 19 20 views of western peaks of Mt McC mass. showing 021 etc.
Photo 21 - looking east shows outcrop of JB61. grt-qtz gneiss. JB60.
Foliation 70°N/100-105°E

JB61 - ? Channockite?
Float from higher along ridge. These boulders scattered amongst other types all over the place. Only small outcrop area.

JB62 ? Calc silicate rock?
from rubble over outcrop 20 metres from JB60.
It is interbedded with the [illegible] gneisses

Along the spur below pt 02B the spur turns North and about 40-50% of outcropping rock is of the extremely mafic gneiss (VB 60). It forms small strongly foliated outcrops which lap small knobbly rises along the spur.

Other rock types present are leuco bi-gnt-gt$\frac{1}{2}$-felsgneiss granite gneiss
Leuco granite pegmatite veins which cut across the mafic gneiss at right angles are about 30-60 cm wide and contain flakes of biotite These veins have disturbed the foliation in place.
The various rock types form bands at least 20-30 m wide

JB 63 Qtzite (? tourmaline).

JB 64 Leuco granite gneiss

JB 65 Gnt-feld. mafic gneiss coarse fraction.

JB 66 Leuco granite gneiss

JB 67 Leuco pegmatite.

All specimens from within 30–40 metre radius

024. 150-200 metres down the Sour. Outcrops of granulite - (hornblende - felsic) granulite text.

JB 68 Gnt. qtz gneiss

JB 69. Granulitic qtz gneiss (50 cm ± above 68)

JB 70 Granulite (1.5 m. above 69)

JB 71 Granulite

JB 72 Coarse gr. granulite or hornblendite.

Granulite is about 5 metres thick

All rocks have surface striking 120° dipping NE 25-30°

Granite gneiss underlying JB68 has ~~foliat^n~~ lineat^n. Strike 065° dip 25° N

JB73 6923 0064

JB79 6925 0070

JB77 6923 0068

South East Paddock Lake
at mouth of Ballyne Glacier.

025 JB 73 Rodon rock type
is fine-med gr pink granite
or granite gneiss, rather like
Aplite. It is not homogeneous
and contains coarser phases
(JB 74) narrow (1-2m)
bands or dykes of biotite rich
mafic gneiss (JB 75) parallel
the regional strike? jointing
oriented // to the bands in
the gneisses to south (down glacier
Two pink granite forms the
rocks on both sides of the
mouth of the glacier.

026 JB 76. Most common bi-gne qtz fels gneiss
JB 77 2nd. Mafic bi qtz fels gneiss
JB 78 3rd Pink qtz fels gneiss
Very similar to Pattern
JB 79 - Qtz fels

40

There are banded gneisses of predom leuco. (gnt)(bi) qtz-fels. gneiss.
Banding is of 2 types:
a) macro — alternating light and dark coloured gneisses about 2–10 metre bands

c) micro — banding 1.0 mm – 2cm in the darker gneiss. This grades into foliation (or alignment) of the qtz in the leuco gneiss. In places bi defines the foliation
Some of the qtz-fels gneiss appears very similar to pegmatite or graphic granite with the alignment of the qtz crystals

027 South end of Kadok L.
about 50 feet above
base of Sediments in
hill of dolerite 2-3 m
thick in Permian Beds
Sill tapers to the west (meta
- morphics side) It is
mostly fine grained (JB80)
with coarser varieties
and some porphyritic material
(JB81)
Alex has collected from here
so get specimens.

Slope between outcrops of
metamorphics and sediments
appears to be meta Scree
(overlying meta outcrops)
mixed with moraine? Visual
extent of beds may be
unconformity on metamorphic
basement

42

13-2-69

028 Amanda Rookery

SPA Survey camp before move

Banded gnt. qtz fel gneiss with mafic bands and numerous qtz blows

Samples JB 82
JB 83
JB 84
JB 85
JB 86.

82-85 may be suitable for age determinat^n.

Outcrops are cut by numerous small faults (random orient^n) which have pulled the regional foliat^n around slightly

eg

Regional fol^n. ≈ 135° true but varies greatly

029 Filla Island 14-2-69.
Rauer Group.
Vicinity of Survey Station.
Banded gneisses are garnetiferous fels-qtz rocks with large areas 20-30 m wide of massive unfoliated gneiss with interbeds of more mafic gneiss, gnt-bi gneiss qtz veins and pink fels qtz pegmatite. (all only a metre or so across.)

JB 87 Pink pegmatite vein
88 Leuco fels-qtz gneiss
89 Bi qtz fels. gneiss
90. Bi Gnt ~~p/fg~~. gneiss
91 Gnt Qtz fels gneiss
92. Bi Gnt gneiss
93. Bi Gnt gneiss

030 Campsite in small saddle west of Sarvey pt.

JB 94 Leuco qtz-feld gneiss
95 Gnt bi qtz gneiss
96 Mafic gneiss (Px-feld)
97 Leuco qtz feld gneiss
98 Pink pegm. vein
99 Bi gnt gneiss
100 Bi. qtz feld gneiss (gnt)
101 Bi. qtz feld gneiss (gnt)
102 Bi. qtz feld gneiss (gnt)

031

032

033

034

North side Church Street

JB/DL - Thin platy fine grained

JB/05 - W.K. Thinly laminated

yellowish brown weathering

surface with poorly developed

jointing or foliated in places

but mostly massive homogeneous

appearance. Occasional dark

& light banded lenses or veins

of coarse granular quartz

Cf. Mt McCarthy Schist

Surface Loc. 1 Identified

foliated glacial pavement

with jacketed erratics scattered

over the hillside.

All intrusive - Origin unknown

of metamorphic rocks similar

to type of Kaweka Group

DAVIS. Host Base Station
19-2-69.

035

~~100~~ At base of most easterly guy on small mast between station huts & radar dome. — about 15 metres towards the sea from radar dome to 3m wide bitumite strip.

JB 106 — Oriented sample for palaeomag.

JB 107 do. do

Bearings are true north + 70° declination adjustment

JB 108 Sample grass (Ivesia gordonii) from side of hut towards pier sample JB 109.

036

~~40~~ 20 metres, up slope from beach towards radar dome.
JB 109 Quern, light-grey, for age det.

037

~~40~~ JB 110 Pale grey fel gneiss 20-2-67
In vicinity of fine banding
& trend of Davis Sea at
water edge.
JB 111 Pale grey fels gneiss
JB 112
110 & 112 Separated by about
30 metres.

Glossopteris Gully 6-2-69

First o/c from camp ascending gully is SST
Succession upwards is

1) Med-coarse well washed qtzite SST (occas. bi flakes same dirty bands) Cross bedding - very mixed not constant angles - varying current intensity and direction Thickness > 5m.

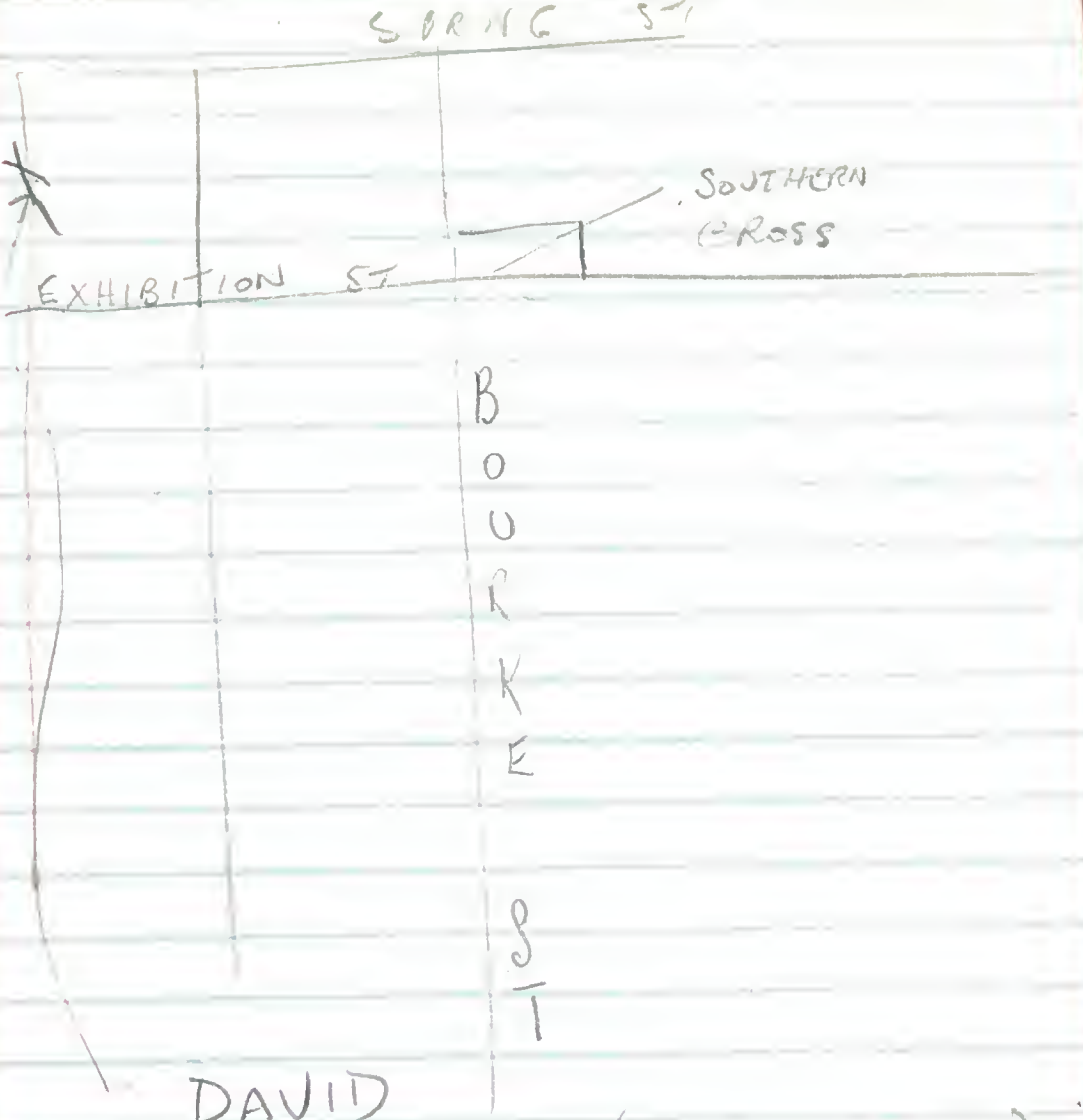
2) Coal (4m) rather fissile bedded coal seam Sharp contacts top and bottom.

3) Light grey shale and silty shale (5m) with thin interbeds 1-2 cm) of fine sand. (cross bedded) Containing abundant plant remains

4) Coarse bi bearing quartzose ssl (.1–1.2 m) massive ankose some cross bedding

5) 1.5 m grey shale as below (a seq.) cross bedding on v. small scale marked by limonite coating on surfaces.

6) 3+m sst as before with current bedding and lenses and swirls of dirty sst Varies coarse to medium grades up into thin interbeds of siltstone sst and shale.

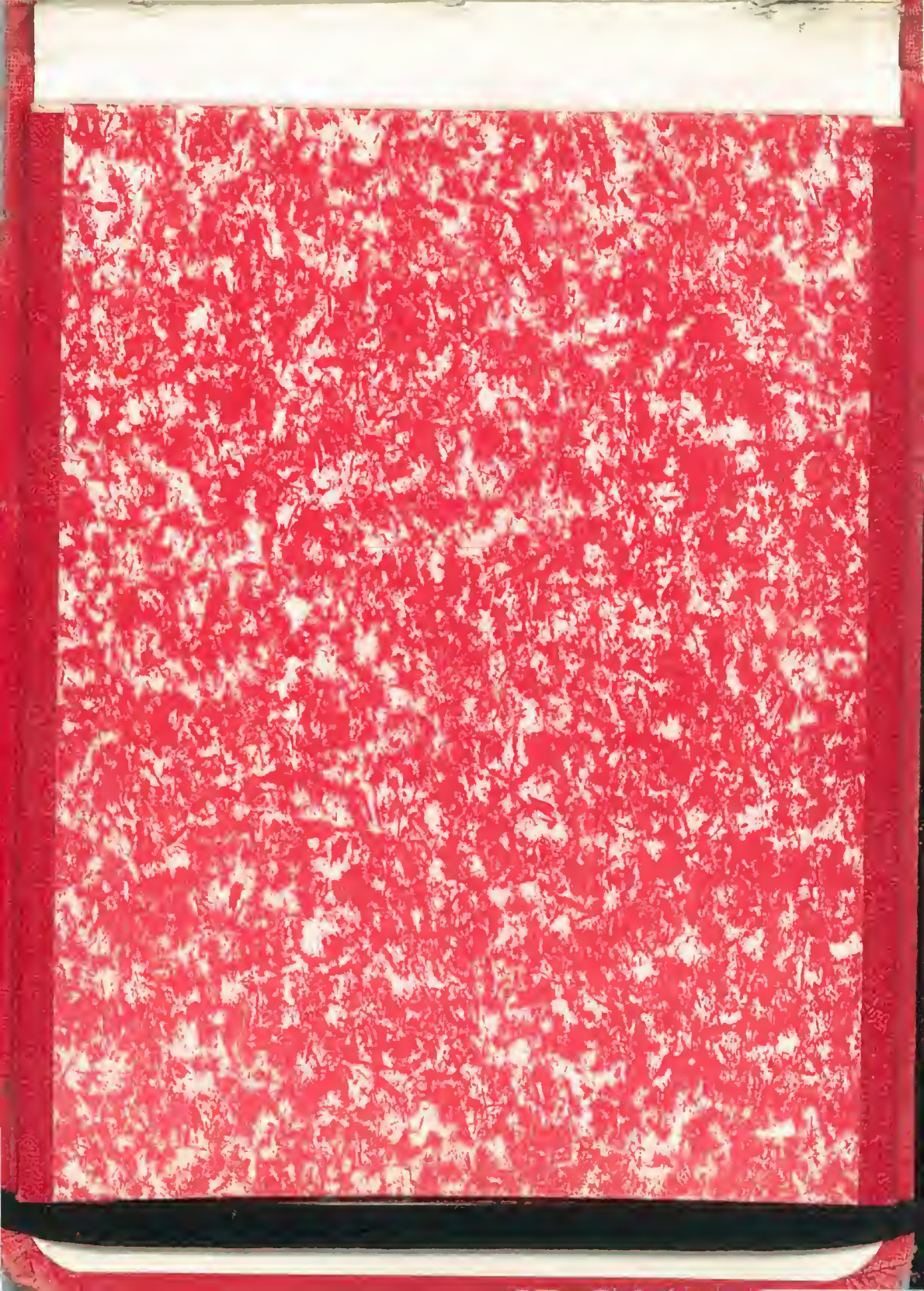


Recommended by Lonely Planet

Antarctic Field Equipment

Improvements

1) Light windproof jacket
2) Foam rubber/plastic mattress
3) Sponge type door mat
4) Glove hangers
5) UV cream + lanolin
6) Broad brimmed hat
7) Gas stoves (Fluet)
8) Extra workingboots eg climbing boots
9) Travel gear packed complete for each party.
10) Alfoil for fieldpartys

Items for NG.

1. Canteen Saucepan Set.
2. Meta tabs
3. Swallow-Aerials SLEEVELESS
4. Al foil
5. Army Watches - sealed Omega type
   ~ $7 cost to Army.